DOCUMENT RESUME

ED 249 766 FL 014 489

AUTHOR Drobnic, Karl
TITLE Teaching Conceptual Paragraphs in EST Courses: A Practical Technique.
PUB DATE 78
NOTE 12p.
PUB TYPE Guides - Classroom Use - Guides (For Teachers) (052)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Classroom Techniques; Engineering Education; Foreign Students; Graduate Study; Higher Education; Nuclear Technology; *Paragraph Composition; Reading Comprehension; Second Language Instruction; *Writing Instruction
IDENTIFIERS *English for Science and Technology; Oregon State University

ABSTRACT

One portion of a course in English for Science and Technology (EST) designed for foreign nuclear engineers studying at Oregon State University dealt with the conceptual paragraph, considered a basic unit of discourse in EST. The conceptual paragraph is defined as a group of rhetorically related concepts developing a generalization to form a coherent and complete unit of discourse and consisting of one or more traditional physical paragraphs. Central to this construction is a core generalization from which the rest of the paragraph develops. The classroom implementation of this course was affected by two issues occurring frequently in EST instruction: the potential or presumed conflict of scientific content with humanities-based instruction, and the problem of selecting conceptually appropriate teaching materials. The materials for this portion of the course came from a government nuclear text and was used intact for this advanced level course. The lesson in conceptual paragraphing consists of a reading, discussion and analysis questions, exercises in definition, and a flowchart used by students to map out the development of a single concept through three physical paragraphs, a familiar process for the scientist students that aided them in grasping the conceptual unity of the text. (MSE)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

Karl Drobnic
ELI AdS A100
Oregon State University
Corvallis, Oregon 97331
USA

ED249766

ESPMENA 10, Summer, 1978, U.of Khartoum
Bex, Tony, James Crofts,and Phil Skeldon, Editors.

EST CLEARINGHOUSE
ENGLISH LANGUAGE INSTITUTE
OREGON STATE UNIVERSITY
CORVALLIS, OREGON 97331

Teaching Conceptual Paragraphs in EST Courses

A Practical Technique

by

Karl Drobnic, Oregon State University

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
X The document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Karl Drobnic
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

FL014489

Introduction The increasing attention paid to teaching reading skills in English for Science and Technology (EST) programs stems in part from increasingly sophisticated assessments of student needs and in part from theoretical research into the English language problems of science students foreign to the language. It has been found that a problem common to many of these students who by traditional university standards are proficient in English is that "they often seem

unable to comprehend the total meaning of the EST discourse even when they understand all the words in each sentence and all the sentences that make up the discourse" (Selinker, Trimble, and Trimble, 1976).

The "Washington" school of EST, cited above, has made extensive investigations into the rhetoric of EST, which is defined as "the process a writer writing scientific English employs to produce a desired text. This process is the act of organizing scientific and technical information for specific purposes and for specific types of readers" (Trimble, 1974). The still on-going investigations of the Washington researchers have produced results that prescribe the extension of traditional English language reading instruction to include rhetorical as well as linguistic competence.

In line with this, a series of lessons were developed at Oregon State University to introduce a group of Taiwanese nuclear engineering students to selected rhetorical features of EST discourse. The lessons covered such topics as definition, classification, conceptual paragraphing, non-temporal verb choice, and implicit information. The lesson described herein is a technique for teaching conceptual paragraphing that makes use of flowcharting.

The Conceptual Paragraph The Washington research contends that "in EST the conceptual paragraph is the basic unit of discourse" (Lackstrom, Selinker and Trimble, 1973). For English language teaching, this contention indicates a need for training beyond sentence-level proficiency. Language

BEST COPY AVAILABLE

training needs to focus on how sentences function in stretches of text.

The somewhat standard practice of teaching that a paragraph is a group of sentences set off by indentation which have a topic sentence and form a complete unit of thought does not always correspond to what the conceptual paragraph is. The Washington research suggests restructuring this view of paragraphing to include the concepts of the physical paragraph and the conceptual paragraph.

In this approach, the physical paragraph is "a group of sentences marked on a page of text by spacing or indentation. It is also the unit which makes up the conceptual paragraph" (Koneeni and Trimble, 1976). The physical paragraph corresponds to the standard notion of the paragraph's form, but it may or may not equal one conceptual paragraph. Failure to recognize this on the part of the foreign science student may result in his employing a reading strategy that is time-consuming, cumbersome, and inadequate.

The conceptual paragraph is "a group of organizationally (rhetorically) related concepts which develop a given generalization in such a way as to form a coherent and complete unit of discourse. It can consist of one or more physical paragraphs" (Koneeni and Trimble, 1976). Central to conceptual paragraphing is the "core generalization" (Lackstrom, Selinker and Trimble, 1973), a generalization from which the rest of the conceptual paragraph develops. If this core generalization has no logical subdivisions which the writer wishes to develop, he is likely to finish off his paragraph in much the traditional

BEST COPY AVAILABLE

BEST COPY AVAILABLE

manner of adding supporting information and specific details and then pass on to a new idea in a new paragraph. In such cases, the physcial and conceptual paragraphs correspond.

However, if the core generalization of the first physical paragraph contains one or more sub-parts that the author wishes to develop, the sub-parts will be developed in separate physical paragraphs, each with a sub-core that relates back to the core generalization of the first physical paragraph. Thus, several physical paragraphs may be related in terms of concept to a particular generalization, and all of these physical paragraphs, in terms of reading strategy, should be treated as one paragraph—a conceptual paragraph.

Classroom Implementation The lessons on rhetorical features of EST developed for the Taiwanese nuclear engineers formed one component of a larger reading skills program. Before presentation of the particular lesson on conceptual paragraphing, however, I wish to deal briefly with two recurring issues that continue to effect the classroom implementation of EST lessons.

The first issue is the reluctance of those many language teachers with a background in the humanities to teach science-based language lessons. Addressing this problem, R. Mary Todd Trimble (1976) states, "...at present there are valuable skills learned from literary training which are applicable to EST." When a rhetorical feature, such as a conceptual paragraph, becomes the focus of a language lesson, a stretch of text must be dealt with at discourse level. As the above-cited

BEST COPY AVAILABLE

article points out, dealing with text at discourse level is what the literary set is accustomed to doing. In terms of rhetoric, the humanities-oriented language teacher is still on familiar soil.

The language teacher will remain on familiar soil if he remembers that the business of the language teacher in an EST program is to provide guidance in those specific ways that scientists use language which are relevant to that particular group's communication needs. In respect to this, it is important that the science used in a language lesson is not conceptually more sophisticated than the students' knowledge of science, for it is when this happens that the teacher finds himself trapped in the position of trying to explain what he does not understand. It is thus important that lesson material be selected which the student can understand conceptually. The teaching focus can then remain on the language used to express the concept.

This leads into the second issue, which can be concisely stated in the question, "Why can't the language features of EST be taught using non-science material?" The problems of selecting conceptually appropriate teaching materials are greatly lessened if the teacher can return to familiar ground. The basic answer is that the communication needs of the students must be met, and, "...whereas these needs may be superficially linguistic they are undeniably cognitive in essence." (Doherty, 1977) The students are studying language in order to gain entrance into specific systems of thought foreign to them. They are engaged in acquiring cognitive skills. What is

BEST COPY AVAILABLE

BEST COPY AVAILABLE

required are "...cognitive skills in a real context and since the system, skills and context are language specific, their realization must be in, through and with that language" (Doherty, 1977).

The lessons developed for the Taiwanese group were based on selections from nuclear texts. The lesson introducing conceptual paragraphing that is presented below was preceded by lessons on definition and classification. This lesson demonstrates to the student how a series of definitions is used to classify atomic fuel, and that the classification is spread throughout the three physical paragraphs. The flowchart exercise at the end of the lesson is a graphic demonstration of the development of a single concept through three physical paragraphs.

The Lesson Material for this lesson was selected from a US Government publication entitled Atomic Fuel (Hogerton, 1966). The text has not been modified. The Taiwanese engineers had an advanced level of English and were targeted for graduate level study. The lesson has been revised slightly for this article, but is essentially the same as that presented in the classroom.

****

Tai Power 77 EST Lesson 3 Instructor: Drobnic

CONCEPTUAL PARAGRAPHING

Introduction

1. The reading below makes extensive use of definition to classify "atomic fuel".

BEST COPY AVAILABLE

BEST COPY AVAILABLE

2. Remember the formula for definition: "A is B which C".

3. Remember the information needed to classify:

a) a class b) class members c) differences

4. The reading below develops one idea in what appear to be three paragraphs. The three paragraphs you see are called physical paragraphs. They form one conceptual paragraph. The writer uses three physical paragraphs to develop one idea, or one conceptual paragraph.

READ:

"What Atomic Fuel Is Atomic fuel consists basically of a mixture of fissionable and fertile materials. The essential ingredient is a fissionable material, a material that readily undergoes nuclear fission when struck by neutrons. The only naturally available fissionable material is uranium-235, an isotope of uranium constituting less than 1% (actually 0.71%) of the element as found in nature.

"Almost all the rest (99.28%) of the natural uranium element is the uranium-238 isotope, which is of interest to us for a different but related reason. For when neutrons strike uranium-238 a fissionable material is generally formed, namely plutonium-239. So, although natural uranium actually contains only a little fissionable matter, almost all of it can be copverted to fissionable matter.

"Because it has the property of being convertible to a fissionable material, uranium-238 is called a

BEST COPY AVAILABLE

fertile material. A second substance that has this property is the element thorium. Its fissionable derivative is still another isotope of uranium, uranium-233.

Discussion and Analysis

1. The purpose of the three paragraphs above is to classify atomic fuel. The first sentence defines "atomic fuel". The rest of the reading develops classifying information. Identify the following:

a) term to be classified— (atomic fuel)

b) class to which it belongs— (fuel)

c) members of the class— (U-235, U-238 etc.)

d) differentiating information— (fertile, etc.)

2. The most important unit in writing in scientific English is the conceptual paragraph. Discuss:

a) core generalization

b) sub-cores.

Exercise 1. Using the information in the reading, write out definitions for each of the following terms. Use "A is B which C".

Physical Paragraph 1

1. Atomic fuel is _____.

2. A fissionable material is _____.

3. U-235 is _____.

It is also _____.

Physical Paragraph 2

4. U-238 is _____.

5. Pu-239 is _____.

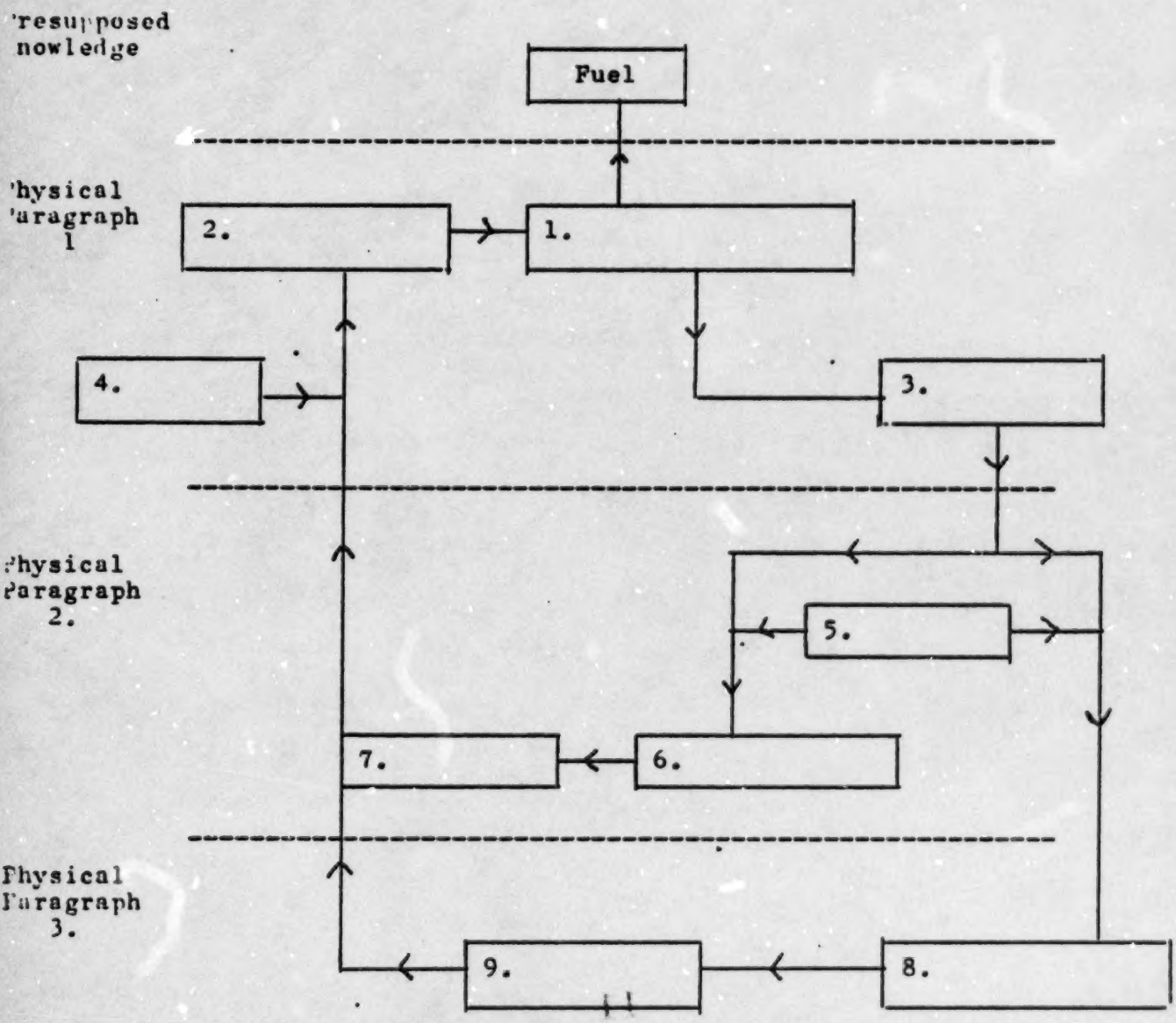
BEST COPY AVAILABLE

Physical Paragraph 3

6. U-238 is also defined as _____.

7. A fertile material is _____.

Exercise 2. Construct a flowchart of the information presented in the reading. Use the questions on the next page as a guide.



BEST COPY AVAILABLE

Flowchart Questions

1. What is the term being classified?
2. What is the essential ingredient?
3. What is the other ingredient in the mixture?
4. What is the naturally occurring fissionable material?
5. What must strike fertile material to form fissionable material?
6. What is the majority of the natural uranium?
7. What is the fissionable product of U-238?
8. What is a second fertile material?
9. What is its fissionable product?

End of Lesson

****

Results Being already practicing engineers, the Taiwanese were thoroughly familiar with the idea of flowcharting. Representation of conceptual paragraphing in graphic form employed a familiar cognitive process. It required the transfer of verbal information to a visual form that the students already knew was used to represent logical inter-relationships. The intent to use the students' cognitive skills from their field of expertise was fulfilled; the students quickly grasped the conceptual unity of the stretch of text and in subsequent lessons proved to be adept at recognizing conceptual paragraphs.

BEST COPY AVAILABLE

REFERENCES

Doherty, Michael P. 1977. "An Investigation into the Cognitive Variable in EST Programmes." U. of Kuwait, Kuwait.

Hogerton, John. 1966. Atomic Fuel. U.S. Government Printing Office, Washington, DC.

Konecni, Evica and Louis Trimble. 1976. "Scientific and Technical Rhetoric, Glossary of Technical Terms". Skopje, Yugoslavia and Seattle, Washington, USA.

Lackstrom, John, Larry Selinker and Louis Trimble. 1973. "Technical Rhetorical Principles and Grammatical Choice". TESOL Q., Washington, DC, Vol 7 No. 2.

Selinker, Larry, R.M. Todd Trimble and Louis Trimble. 1976. "Presuppositional Rhetorical Information in EST Discourse". TESOL Q., Washington, DC, Vol 10, No. 3.

Trimble, Louis. 1974. "The Use of Scientific and Technical Rhetoric in Teaching Reading". Paper read at IATEFL-T.I.T. Conference, Budapest, Hungary.

Trimble, R. Mary Todd. 1976. "Literary Training and the Teaching of EST to Non-native Speakers". English Teaching Forum, Washington, DC.

BEST COPY AVAILABLE